

How do consultant radiographers contribute to imaging service delivery and leadership?

Mapping role content through activity diaries

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Introduction

When the first non-medical consultant roles were developed in the UK in the early part of the 21st century there was an expectation that these would bring about improvements in care through innovation and increasing evidence-based practice. Launched as part of the millennial NHS Plan in England, nursing and midwifery roles were quickly established, bolstered by a target of 1,000 posts across England (Department of Health 2002). This was swiftly followed by announcement of a more modest number of 250 allied health profession (AHP) posts (Henwood & Booth 2016).

Regardless of profession, it was expected that posts would vary between employers, linked to different clinical specialities or pathways. However, the initial expectations of the roles remain unchanged, with the posts comprising 4 core functions:

- Expert clinical practice
- Leadership and consultancy
- Practice and service development, research and evaluation
- Education and training

(Department of Health 2002)

Whereas consultants were expected to spend at least half of their time undertaking direct patient related activities, the contribution to the remaining functions is not defined. However, the expectations were high as these posts were intended to impact on waiting lists, raise standards and

embed evidence based practice. Perhaps more importantly, these individuals were to be clinical leaders, modernising services from the front-line (Johnson 2005).

When the first consultant radiographers were appointed in 2003, the diagnostic roles were specifically linked to expanding imaging capacity (Department of Health 2003). But 15 years later the capacity challenges remain, with year on year increases in workload (Maskell 2015) and ongoing workforce shortages (Royal College of Radiologists 2017; Society of Radiographers 2017). Although posts have increased over time, the numbers remain modest, with only 111 in substantive consultant diagnostic radiographer posts 15 years after their inception (Society of Radiographers 2018). This is compounded by the limited evidence of their impact, with ongoing confusion and debate about the job content (Henwood et al. 2016). Perhaps more importantly, the opportunities and impact of their role in clinical leadership has not been established.

Aims

The specific aims of the study were to examine the activities undertaken by a cohort of consultant radiographers over a single week, evidence the impact of the roles and consider whether the roles encompassed the four domains of consultant practice.

Method

This was an observational study based on interval sampling of activities by six consultant radiographers within a multisite NHS Trust. The individuals represent a range of imaging clinical sub-specialties working closely with consultant radiologist colleagues and management teams, as well as other radiographers including a large team of advanced practitioners. At the time of data collection the participant's experience as a consultant varied from 4-12 years, all working full-time, contracted for 37.5 hours per week. A generic role description includes all the core functions of consultant practice within a standardised job plan (60% clinical). The clinical practice speciality varies, focussed

either around an imaging modality (computed tomography (CT); general radiography (n=2); ultrasound) or anatomical site (breast; gastro-intestinal (GI)).

Recording actions through a diary remains a popular research method, particularly for the monitoring of physical activity or food intake but there are examples of their use in the workplace by other non-medical health professionals (Fairley & Closs 2006; Humphreys et al. 2010; Oddsdóttir and Sveinsdóttir 2011; Snaith et al. 2016). It is acknowledged that there are methodological challenges to their use, particularly around compliance (Crosbie 2006), however they enable large amounts of data to be collected over periods of time not be possible using direct observation. Key to this study was the potential to record multiple participant activities over the same time period. Following a review of previous studies (Richardson et al. 2008; Humphreys et al. 2010) and local job descriptions a list of activities was compiled. These activities were then grouped by role function and assigned a numerical code. To ensure completeness, a pilot study was undertaken resulting in minor changes to the list of codes (Box 1). The range of research activities recorded (activity number 33) included meetings as well as those related directly to study conduct including literature reviews, data collection, analysis and publication preparation.

Clinical practice <ol style="list-style-type: none"> 1. Image acquisition/procedure (e.g. x-ray, scan) 2. Undertake intervention (e.g. biopsy, NG relocation) 3. Reporting studies 4. Verifying reports of others 5. Review of imaging on request 6. Clinical assessment of patient 7. Provide advice - radiographers 8. Provide advice - clinicians 9. Seek advice 10. Multidisciplinary team (MDT) meeting 11. Refer patient to another service 12. Refer for/organise radiology investigation 13. Request other diagnostic procedures 14. Discharge emergency department (ED) patient 15. Vetting (justifying) referrals 16. Waiting times/ list management 17. Problem solving (e.g. equipment/images) Leadership/consultancy <ol style="list-style-type: none"> 18. Management meeting – radiology 19. Management meeting – wider Trust 20. Management meeting – external 21. Incident/complaint management 22. Staff management (e.g. appraisal) 23. Evaluation or assessment of equipment 24. Guideline or pathway development/review 	Education <ol style="list-style-type: none"> 25. Directly supervise radiographer (or student) 26. Directly supervise radiologist (or trainee) 27. Teaching/assessment – radiology 28. Teaching/assessment – wider Trust 29. Teaching/assessment – external 30. Preparing teaching materials 31. Higher education meeting Research, audit and service evaluation <ol style="list-style-type: none"> 32. Audit 33. Research 34. Journal activity (e.g. review, editorial) Other <ol style="list-style-type: none"> 35. Travel 36. Break 37. Emails 38. Mandatory training 39. Continuous professional development (CPD) 40. Other
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Box 1: Activity diary coding

A data collection tool used within previous activity diary studies (Oddsdóttir and Sveinsdóttir 2011; Snaith et al. 2016) was chosen to capture the activity at an individual level. The data collection tool was distributed to each consultant (n = 6), who recorded a maximum of four activities every 15 minutes over seven consecutive days. The tool also provided space to add comments to expand on key activities or interactions if required.

For convenience, and in line with previous studies, each coded activity was allocated the full 15 minutes. This resulted in the recording of ‘relative hours’ of work for each domain and activity category. The data were transcribed into an Excel database (Microsoft, US) to calculate the total working time, total relative working time, the number of activities and core functions for each participant.

As the study reviewed practice with no change to patient care or role, it was considered as service evaluation and as such did not require ethical approval. The consultants retained a copy of their individually completed diary for verification of the results.

Results

No changes to the diaries or records were made during data validation. All the consultant radiographers worked in excess of their contracted hours during the study week (Table 1). The documented activities demonstrate the breadth of the roles and confirmed the individuals to be undertaking all four core functions of consultant practice.

Table 1 - Comparison of relative and worked hours across core consultant functions

Participant	Function (relative hours)					Total Relative hours	Actual Worked hours
	Clinical	Leadership & consultancy	Education & training	Research, audit & service evaluation	Other		
1	13.50	5.25	17.75	1.50	7.25	51.75	42.50
2	32.25	5.00	2.25	4.50	5.00	59.00	41.50
3	8.50	9.75	3.25	22.00	11.00	56.50	49.00
4	17.25	11.75	0.75	6.25	11.50	77.00	42.25
5	27.25	8.50	0.50	9.50	10.75	62.75	50.25
6	23.25	2.75	7.25	6.25	6.50	56.50	41.25
Average	20.33	7.17	5.29	8.33	10.17	60.58	44.46

The most commonly recorded activity was the definitive independent reporting of imaging examinations (Table 2), although both clinical and non-clinical domain functions featured commonly. The clinical activities varied according to the speciality of the participant, with those working in general radiography having more limited direct patient contact (i.e. more reporting), whereas in addition to performing imaging investigations the GI consultant also undertook a number of flexible sigmoidoscopy examinations. The research domain activities varied, with scholarly activities encompassing local audit, pathway evaluation, research data collection, publication preparation and peer review. The activity of one consultant was skewed towards the research domain, as the result

of the data collection coinciding with attendance at a journal editorial board meeting. The ‘other’ category included many administrative activities such as doing emails, data management and teleconferences.

Table 2: Fifteen most frequently documented activities by the six consultant radiographers

Activity	Frequency	Relative hours	Participants
Reporting studies	194	48.50	6
Image acquisition/procedure	187	46.75	4
Emails	185	46.25	6
Research	143	35.75	6
Journal activities	49	12.25	4
Teaching/assessment	41	10.25	3
Provide advice to radiographers	40	10.00	6
Travel	40	10.00	3
MDT meeting preparation/attendance	36	9.00	4
Vetting (justifying) referrals	35	8.75	5
Staff management	35	8.75	4
Waiting list management	34	8.50	5
Provide advice to clinicians	30	7.50	5
Incident/complaint management	29	7.25	5
Development of protocols or pathways	26	6.50	5

Management activities (including staff management, waiting list administration and incident/complaint investigation and response) featured in the diaries of all consultants (Figure 1), with five consultants also attending management meetings (range 1-6 relative hours).

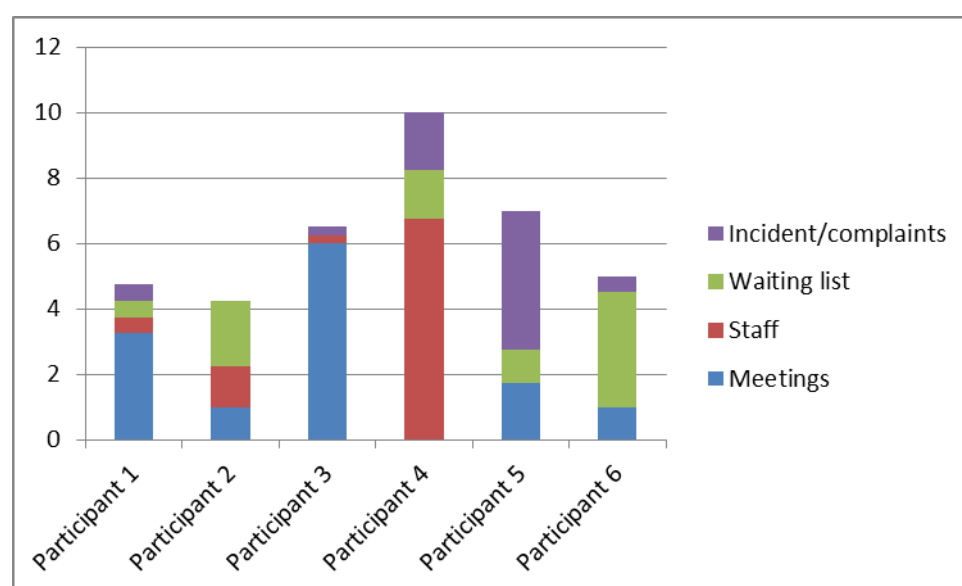


Figure 1: Management activities undertaken by the consultant radiographer participants

The consultants acted as a resource for other staff, with radiographers and clinicians seeking the individuals for advice. However their influence was wider with evidence of impact on patients, staff and the organisation (Figure 2).

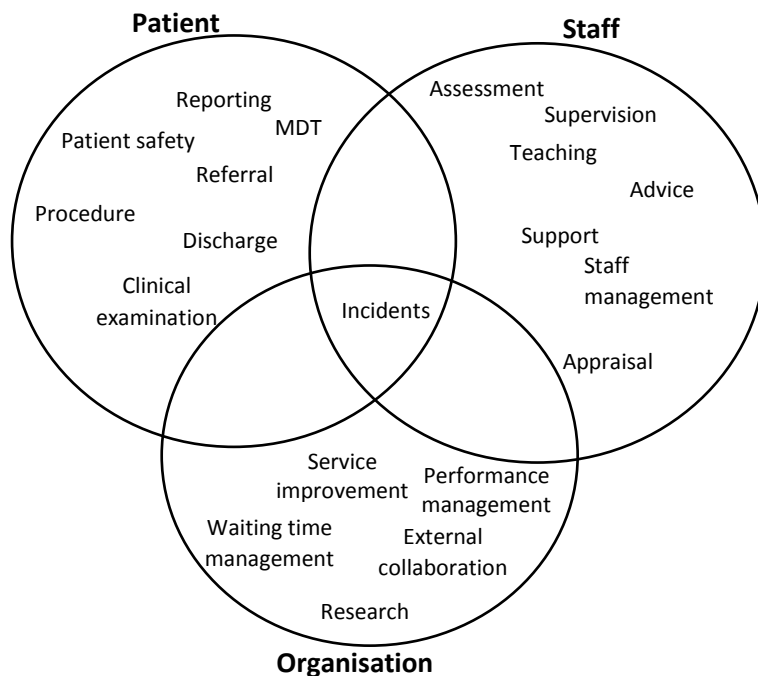


Figure 2: Impact of the consultant radiographers

Discussion

Currently only UK radiographers can achieve consultant status, but similar posts do exist within nursing globally. There is also ongoing international interest in the potential of such roles to impact on patient care and pathways across health professions. These posts are relatively expensive and in the current financial climate there is a need to demonstrate value to patients, referrers, stakeholders, the health system and society (Barrie 2014). Although there have been numerous publications describing the lived experience of the consultant radiographer role from a personal (Jones & Robinson 2008; Kelly et al. 2008; Rees 2014), or independent perspective (Ford 2010; Forsyth & Maehle 2010; Hardy & Nightingale 2014a, 2014b; Booth et al. 2016; Henwood et al. 2016), there remains a lack of evidence quantifying the impact of such practice on a day to day basis

(Hardy et al. 2016; Snaith et al. 2018). The activity diaries provide insight into the individual contributions to patient care, staff leadership and service delivery.

The 4 core domains of consultant level practice were undertaken by all participants within the period of data collection but the composition and volume of activities varied. This reflects the fact that this study was snapshot of the role, with each participant also specialising in a different field. Expert clinical practice is the most frequently recorded core function with the consultant acting as an expert practitioner and a facilitator for others to achieve higher skills. This is unsurprising as AHP consultants are expected to spend 50% of their time in clinical practice (Department of Health 2001). Working as a clinical expert also saw the consultants undertaking staff development through teaching, supervision, assessment. These activities are core to raising standards and assuring the quality of services and the competence of practitioners. It is reassuring to observe that research and scholarly activity was undertaken by all consultants within the period evaluated, research activity has been acknowledged to provide the domain with the greatest challenge in such roles (Stevenson et al. 2011; Harris & Paterson 2015; Rosser et al. 2017a). Like the peer group reported in Rosser et al. (2017a; 2017b) only one consultant within this study has a doctorate, although all hold a Masters degree.

This evaluation demonstrated that the service leadership roles of non-medical consultants are strategic, as well as clinical, in contrast to findings by Humphreys et al. (2010) who suggested there was only a clinical leadership element. Working at a clinical, organisational, system and national level requires a range of leadership styles (Chapman et al. 2014; Booth et al. 2017) and a development programme. Within the study organisation the peer support and credibility of the role (and individuals) has been built over time and this has likely influenced the reach of the roles internally and externally (Nightingale et al. 2018). Similar findings have been found in the work exploring nurse and AHP roles led by Rosser (Rosser et al. 2017a, 2017b).

The primary purpose of this study was to understand what consultant radiographers do and how this contributes to imaging leadership and management, as such it did not explore the impact on patient outcomes or service quality. The evidence of impact of advanced and consultant radiographer roles on patient outcomes is limited (Hardy et al. 2016), exacerbated by the unique nature of roles and the focus on clinical delivery. Demonstrating the value of imaging, and hence specific roles, in patient pathways can be difficult (Snaith et al. 2018). As expected, the clinical domain remains the overarching component in the consultant role, but this study has identified the complexity of activities which take place on a weekly, daily, and hourly, basis. This confirms the wide range of knowledge and clinical skills required for such roles, supporting the work of Humphreys et al. (2010). Giles et al. (2018) identified a number of themes in relation to the clinical leadership role and this study demonstrates clear resonance with their outcomes, particularly around knowledge and visibility, collaboration and connections, flexibility and positioning, with the consultants influencing within and external to the service. This also aligns with the work of Gerrish et al. (2013) with impact of clinical, professional and organisational significance. Coster et al. (2006) found that the greater the number of activities consultants reported being engaged in, the higher they rated their impact they had on their service. In this study, the discrepancy between relative and worked hours reflecting multitasking and confirms the consultants are carrying a broad caseload.

An important outcome of the study is the volume of administrative activities undertaken within such roles, which requires job planned time. The reality of modern clinical practice means electronic and paper based correspondence together with staff and patient documentation, waiting list activities and (non-clinical) report writing. It is perhaps only when the volume of such activities are monitored that we appreciate the challenges to delivering care at this level.

Limitations

The study was conducted within a single centre and the activity diaries were only recorded over a 1 week period which cannot provide a comprehensive reflection of the whole role. Anecdotally it is

not unusual for consultant practitioners work weeks to vary, with some weeks being quite heavily clinically oriented and others managerial or academically based. This study also relied on self-recording of activities which could potentially introduce bias.

Conclusions

Overall the outcome of this study suggest that the consultant radiographers within this centre are delivering the leadership expectations of the role, contributing significantly to service delivery and capacity generation as was expected by the initial strategy. Importantly the impact of the individuals across multiple facets cannot be underestimated, with their reach and influence being felt beyond the local department and organisation to the health system and wider profession.

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